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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 10/023,094      | 12/17/2001  | Xuemei Ouyang        | US 010665           | 2441             |

  

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| EXAMINER            |  |
| MOORE JR, MICHAEL J |  |

  

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| ART UNIT | PAPER NUMBER |
| 2616     |              |

  

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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

|                              |  |                                      |  |
|------------------------------|--|--------------------------------------|--|
| <b>Office Action Summary</b> | <b>Application No.</b><br>10/023,094     | <b>Applicant(s)</b><br>OUYANG ET AL. |  |
|                              | <b>Examiner</b><br>Michael J. Moore, Jr. | <b>Art Unit</b><br>2616              |  |

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 09 April 2007.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1,2,4,6-19,21 and 23-26 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 9-19,21,23,24 and 26 is/are allowed.
- 6) ☒ Claim(s) 1,4,6,7 and 25 is/are rejected.
- 7) ☒ Claim(s) 2 and 8 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 06 December 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Response to Amendment*

Applicant's amendment filed 4/9/07 in response to the Final Office Action mailed 1/12/07 is proper and has been entered. However, upon further consideration, new grounds of rejection are provided below regarding *amended* claims **1, 4, 6, 7, and 25**. Accordingly, the finality of the previous Office Action has been withdrawn.

### ***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

3. Claims **1, 4, 6, 7, and 25** are rejected under 35 U.S.C. 103(a) as being unpatentable over Malkamaki (U.S. 2002/0172208) in view of Lee et al. (U.S. 6,882,660) (hereinafter "Lee") and in further view of Mahe (U.S. 6,535,488).

Regarding claim 1, *Malkamaki* teaches the reception of various physical channels used to convey data blocks (received packet) and respective sequence numbers by a PHY module 12c (first storage medium) as spoken of on page 3, paragraph 34.

*Malkamaki* also teaches the determining of whether a received data block (packet) is a retransmitted data block by comparison of the sequence number (field) of the received data block to sequence numbers (corresponding field) of previously received data blocks stored in a soft combining buffer (second storage medium) as spoken of on page 4, paragraph 36, lines 13-26.

*Malkamaki* does not explicitly teach the demodulation of received packets to be stored in a first storage medium.

However, *Malkamaki* does teach the use of an appropriate modulation and coding scheme (MCS) for data to be transmitted to a user terminal as spoken of on page 4, paragraph 35, which implies that modulation and demodulation of data is performed.

Further, *Lee* teaches a demodulation unit 222 in Figure 2 that demodulates received radio data as spoken of on column 4, lines 48-51.

These references are considered to be analogous art in that they are both concerned with data recovery using ARQ.

At the time of the invention, it would have been obvious to someone of ordinary skill in the art, given these references, to combine the demodulation teachings of *Lee*

with the system of *Malkamaki* in order to provide a well-known signal processing method in wireless communication.

*Malkamaki* also does not teach that if the received packet is a retransmission, combining the received packet with a previous packet using a maximum ratio combining method.

However, *Lee* teaches on column 6, lines 59-63, that if a retransmission is detected, the layer 1 of the reception side restores/combines the received data repeatedly predetermined times using a maximal ratio combining (MRC) process.

At the time of the invention, it would have been obvious to someone of ordinary skill in the art, given these references, to combine the MRC teachings of *Lee* with the ARQ system of *Malkamaki* in order to increase the signal-to-noise ratio and improve the reliability of packet reception.

Further, while *Malkamaki* teaches the determination of whether a received packet is a retransmitted packet by the comparison of sequence number fields as described above, *Malkamaki* in view of *Lee* does not teach the comparison of address fields as opposed to sequence number fields in order to detect packet retransmission.

However, *Mahe* teaches the concept of comparing message address fields of a received message and a previously received message in order to detect a retransmitted message as spoken of on column 11, lines 7-18.

At the time of the invention, it would have been obvious to someone of ordinary skill in the art, given these references, to combine the address field comparison

teachings of *Mahe* with the teachings of *Malkamaki* in view of *Lee* in order to provide an efficient method of detecting a packet retransmission.

Regarding claim 4, *Malkamaki* also does not teach the combining of the received packet with the previous packet according to a signal-to-noise ratio (SNR) symbol of the received packet and the previous packet.

However, *Lee* teaches repeated transmission based upon signal-to-noise ratio as spoken of on column 7, lines 21-26.

At the time of the invention, it would have been obvious to someone of ordinary skill in the art, given these references, to combine the MRC teachings of *Lee* with the ARQ system of *Malkamaki* in order to increase the signal-to-noise ratio and improve the reliability of packet reception.

Regarding claim 6, *Malkamaki* further teaches the combining of data blocks within the receiving terminal 12 (access point) shown in Figure 1.

Regarding claim 7, *Malkamaki* further teaches the combining of data blocks within the receiving terminal 12 (mobile station) shown in Figure 1.

Regarding claim 25, *Malkamaki* further teaches the determining of whether a received data block (packet) is a retransmitted data block by comparison of the sequence number (corresponding MAC frame) of the received data block to sequence numbers (corresponding MAC frame) of previously received data blocks stored in a soft combining buffer (second storage medium) as spoken of on page 4, paragraph 36, lines 13-26.

***Allowable Subject Matter***

4. Claims **9-15** as well as *amended* claims **16-19, 21, 23, 24, and 26** are allowable over the prior art of record.

5. Claims **2 and 8** are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

6. The following is a statement of reasons for the indication of allowable subject matter:

Regarding claims **2 and 8-15**, these claims are allowable for the reasons indicated in the previous Office Action.

Regarding *amended* claims **16-19, 21, 23, 24, and 26**, these claims are allowable for the reasons indicated in the previous Office Action pertaining to now cancelled claim **22**. Specifically the prior art of record does not teach determining whether a received packet is a retransmitted packet based on a comparison between a field of a received packet and a corresponding field of a previously received packet and when a retry bit field of the received packet is activated.

### ***Conclusion***

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Cheng et al. (U.S. 7,054,316), Ghosh et al. (U.S. 6,678,523), and Ostman (U.S. 6,738,370) are other references considered pertinent to this application.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael J. Moore, Jr. whose telephone number is (571)

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272-3168. The examiner can normally be reached on Monday-Friday (7:30am - 4:00pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Seema S. Rao can be reached at (571) 272-3174. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Michael J. Moore, Jr.  
Examiner  
Art Unit 2616

mjm *MM*

*Seema S. Rao*  
SEEMA S. RAO 4/30/07  
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